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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/034,827      | 01/03/2002  | Gary P. Morrison     | TI-31373            | 4496             |

7590 05/06/2003

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Richardson, TX 75081

EXAMINER

MITCHELL, JAMES M

ART UNIT

PAPER NUMBER

2827

DATE MAILED: 05/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

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# Office Action Summary

Application No.

10/034,827

Applicant(s)

MORRISON ET AL.

Examiner

James Mitchell

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 2,4-10,15,17,18 and 23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,4-10,15,17,18 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 0228.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

|                                   |                                       |   |             |
|-----------------------------------|---------------------------------------|---|-------------|
| <b>Notice of References Cited</b> | Application/Control No.<br>10/034,827 | Applicant(s)/Patent Under<br>Reexamination<br>MORRISON ET AL. |             |
|                                   | Examiner<br>James Mitchell            | Art Unit<br>2827  | Page 1 of 1 |

**U.S. PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Name          | Classification |
|---|---|--|-----------------|---------------|----------------|
|   | A | US-6,214,716                                     | 04-2001         | Akram, Salman | 438/612        |
|   | B | US-  |                 |               |                |
|   | C | US-  |                 |               |                |
|   | D | US-  |                 |               |                |
|   | E | US-  |                 |               |                |
|   | F | US-  |                 |               |                |
|   | G | US-  |                 |               |                |
|   | H | US-  |                 |               |                |
|   | I | US-  |                 |               |                |
|   | J | US-  |                 |               |                |
|   | K | US-  |                 |               |                |
|   | L | US-  |                 |               |                |
|   | M | US-  |                 |               |                |

**FOREIGN PATENT DOCUMENTS**

| * |   | Document Number<br>Country Code-Number-Kind Code | Date<br>MM-YYYY | Country | Name | Classification |
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|   | S |  |                 |         |      |                |
|   | T |  |                 |         |      |                |

**NON-PATENT DOCUMENTS**

| * |   | Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages) |
|---|---|---|
|   | U |   |
|   | V |   |
|   | W |   |
|   | X |   |

\*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)  
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Art Unit: 2827

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a) because they fail to show an unpackaged semiconductor device as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 2-10, 12, 15, 17, 18, 20 and 23 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention: unpackaged semiconductor device.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in-

Art Unit: 2827

(1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or  
(2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

Claims 2, 4-10 and 15, 17, 18 and 23 are rejected under 35 U.S.C. 102(e) as being anticipated by Inaba (JP 2001-217388).

Inaba discloses a semiconductor assembly and method of assembling comprising steps of inherently forming strip-like flexible interconnector (2) of electrically insulating polyimide material (Para. 0016) having first (top) and second (bottom) surfaces, said interconnector having on said first surface and second surfaces by inherently forming electrically copper conductive lines integral on said strip like flexible interconnector (Para.0015) for connecting a plurality of packaged semiconductor devices (item 3 surrounded by item R), forming on the first surface with an inherent first array of ports (2f ; Fig 9), said interconnect further having inherent electrical paths extending through said interconnect (via first chip closest to substrate electrically connected to substrate through contacts 7) forming electrical ports (7) on said second surface, and inherently attaching a plurality of second coupling members to said array of inherent ports (via 7; Fig 2), wherein the arrays are grouped in separate areas and a first plurality of ports are spaced apart less, center to center, than a seconding plurality of ports (via spacing of item 2, compared to item 7) are spaced apart, center to center, folding said interconnector so that adjacent semiconductor devices are stacked on top of each other, ant at least one additional unpackaged semiconductor device (chip with

no item R) having a plurality of first electrical coupling members attached to said first plurality of ports, and a plurality of second of second electrical coupling members attached to said second plurality of ports, said coupling members suitable for attachment to other parts, said ports face in one direction while said port face in the opposite direction, at least one semiconductor device (3) having a plurality of gold coupling members (8; Para. 0024) said first coupling members attached to said entry ports (shown in Fig 9); said device is an inherent integrated circuit chip (Para. 0018) having an active and passive surface; said device encapsulated (9) with a non-conducting polymer underfilling any spaces between said coupling members attached to said ports under said device in a package with outside contact pads with said first coupling members inherently attached to said contact pads.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

Art Unit: 2827

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 12, 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba as applied to claims 15 and 23 and further in combination with Denes (U.S. 5,220,488).

Inaba does not appear to disclose passive electrical component integrated into the conductive line, however Denes utilizes disclose passive electrical components integrated into the conductive line (Fig 1, 4, 5).

It would have been obvious to one of ordinary skill in the art to integrate passive components into said conductive lines on the interconnector of Inaba, in order to provide high reliability as taught by Denes (Abstract).

Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inaba as applied to claim 15 or 23 and in further combination with Akram (US 6,214,714).

With respect to claim 5, Inaba does not appear to disclose that the ports are spaces less than 100 micrometers. In any case, it would have been an obvious matter of design choice bounded by well known manufacturing constraints and ascertainable by routine experimentation and optimization to choose these particular dimensions because applicant has not disclosed that the dimensions are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical, and it appears prima facie that the process would possess utility using another dimension. Indeed, it has been held that mere dimensional limitations are prima facie obvious absent a disclosure

Art Unit: 2827

that the limitations are for a particular unobvious purpose, produce an unexpected result, or are otherwise critical. See, for example, *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955); *In re Rinehart*, 531 F.2d 1048, 189 USPQ 143 (CCPA 1976); *Gardner v. TEC Systems, Inc.*, 725 F.2d 1338, 220 USPQ 777 (Fed. Cir. 1984), cert. denied, 469 U.S. 830, 225 USPQ 232 (1984); *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

With respect to claims 8, Inaba further discloses inherent solder balls (via conductive bump members in the shape of a ball), but does not appear to disclose that the solder balls are formed from tin, tin/alloys, tin/ silver, tin/lead etc.

However, since applicant did not traverse that tin lead alloy is well known in the art, it is accepted and any further argument to that affect is waived. In addition, Akram is provided solely to further evidence examiner's official notice in the prior office action that tin lead alloy is well known for providing a conductive connection and that it would have been obvious to one of ordinary skill in the art form a solder ball from lead/tin at the time the present invention was made, in order to provide a ball that was conductive. Further the solder ball materials would have been obvious, since it has been held that to be within the general skill of a worker in the art to select known material on the basis of its suitability for intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416 (1960).

### **Conclusion**

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



Art Unit: 2827

§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on (703) 305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-3432 for regular communications and (703) 305-3230 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

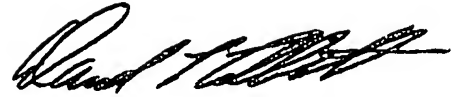
Application/Control Number: 10/034,827

Page 8

Art Unit: 2827



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May 4, 2003



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SUPERVISORY PATENT EXAMINER  
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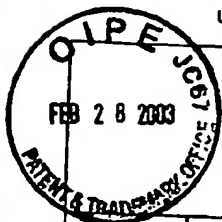
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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 1 Of 2

| Complete If Known    |                          |
|----------------------|--------------------------|
| Application Number   | 10/034,827               |
| Filing Date          | 01/09/2002               |
| First Named Inventor | Gary P. Morrison, et al. |
| Group Art Unit       | 2827                     |
| Examiner Name        | James Mitchell           |
| Attorney Docket No.  | 7-                       |

| U.S. PATENT DOCUMENTS |                       |                      |                                   |   |   |   |
|-----------------------|-----------------------|----------------------|-----------------------------------|---|---|---|
| Exam. Initials        | Cite No. <sup>1</sup> | U.S. Patent Document |                                   | Name of Patentee or Applicant of Cited Doc. | Date of Pub. of Cited Doc. (mm-dd-yyyy) | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear |
|                       |                       | Number               | Kind Code <sup>2</sup> (if known) |   |   |   |
| JM                    | AA                    | 6,121,678            |                                   | Solberg                                     | 09/19/2000                              |   |
| JM                    | AB                    | 6,225,688 B1         |                                   | Kim, et al.                                 | 05/01/2001                              |   |
|                       | AC                    |                      |                                   |   |   |   |
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| FOREIGN PATENT DOCUMENTS |                       |                         |                     |                                   |   |   |   |    |
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| Exam. Initials*          | Cite No. <sup>1</sup> | Foreign Patent Document |                     |                                   | Name of Patentee or Applicant of Cited Doc. | Date of Pub. of Cited Doc. (mm-dd-yyyy) | Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear | T* |
|                          |                       | Office <sup>3</sup>     | Number <sup>4</sup> | Kind Code <sup>2</sup> (if known) |   |   |   |    |
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<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

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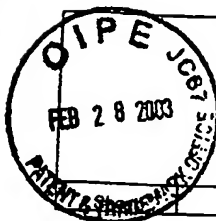
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# INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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2 of 2

## Complete if Known

|                      |                          |
|----------------------|--------------------------|
| Application Number   | 10034.827                |
| Filing Date          | 01/03/2002               |
| First Named Inventor | Gary P. Morrison, et al. |
| Group Art Unit       | 2827                     |
| Examiner Name        | James Mitchell           |
| Attorney Docket No.  | TL-31373                 |

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

| Exam. Initials* | Cite No. <sup>1</sup> | Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published. | T <sup>2</sup> |
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| Examiner Signature | <i>[Signature]</i> | Date Considered | 5/2/05 |
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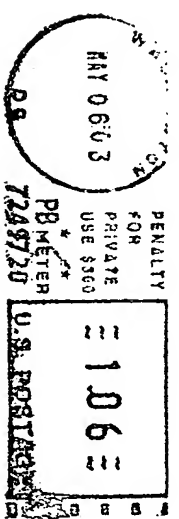
<sup>1</sup>Unique citation designation number. <sup>2</sup>Applicant is to place a check mark here if English Translation is attached.

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